

Filter Strip

Vermont Conservation Practice Job Sheet

VT - 393



Definition

A strip or area of herbaceous vegetation situated between cropland, grazing land, or disturbed land (including forest) and environmentally sensitive areas.

Purpose

- To reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in runoff,
- To reduce dissolved contaminant loadings in runoff,
- To reduce sediment and contaminants entering a Riparian Forest Buffer,
- To reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in surface irrigation tailwater,
- To restore, create or enhance herbaceous habitat for wildlife and beneficial insects,
- To maintain or enhance watershed functions and values.

Where practice applies

This practice applies:

- in areas situated below cropland, grazing land, or disturbed land (including forest land),
- where sediment, particulate organic matter and/or dissolved contaminants may leave these areas and are entering environmentally sensitive areas.
- in areas where permanent vegetative establishment is needed to enhance wildlife and beneficial insects, or maintain or enhance watershed function.

A filter strip is typically positioned at the down-slope edge of a field or disturbed area.

Criteria (General criteria)

- Filter strips shall be designated as vegetated areas to treat runoff and are not part of the adjacent cropland rotation.
- Overland flow entering the filter strip shall be primarily sheet flow. Concentrated flow shall be dispersed.
- State listed noxious weeds will not be established in the filter strip and will be controlled if present.

- Filter strip establishment shall comply with local, state and federal regulations.

CONSIDERATIONS

- Strategically locate filter strips to reduce runoff, and increase infiltration and ground water recharge throughout the watershed.
- Filter strips for the single purposes of wildlife/beneficial insect habitat or to enhance watershed function should be strategically located to intercept contaminants, thereby enhancing the water quality of the watershed.
- To avoid damage to the filter strip consider using vegetation that is somewhat tolerant to herbicides used in the upslope crop rotation.
- Filter strip size should be adjusted to a greater flow length to accommodate harvest and maintenance equipment.

Operation and Maintenance

- Filter strip vegetative plantings should be harvested as appropriate to encourage dense growth, maintain an upright growth habit, and remove nutrients and other contaminants that are contained in the plant tissue.
- Control undesired weed species, especially state-listed noxious and invasive weeds. Prescribed burning may be used to manage and maintain the filter strip when an approved burn plan has been developed.
- Inspect the filter strip after storm events and repair any gullies that have formed, remove unevenly deposited sediment accumulation that will disrupt sheet flow, reseed disturbed areas, and take other measures to prevent concentrated flow through the filter strip. Contact a technical specialist if needed.
- Apply supplemental nutrients as needed to maintain the desired species composition and stand density of the filter strip.
- To maintain or restore the filter strip's function, periodically re-grade the filter strip area when sediment deposition at the filter strip-field interface jeopardizes its function, and then reestablish the filter strip vegetation, if needed.
- If wildlife habitat is a purpose, destruction of vegetation within the portion of the strip devoted to that purpose should be minimized by re-grading only to the extent needed to remove sediment and fill concentrated flow areas.
- Grazing shall not be permitted in the filter strip unless a controlled grazing system is being implemented. Grazing will be permitted under a controlled grazing system only when soil moisture conditions support livestock traffic without excessive compaction.

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Specifications

Site-specific requirements are listed on the following pages of this job sheet. Specifications are prepared in accordance with the Vermont NRCS Field Office Technical Guide. Information contained in this document is considered part of the conservation plan.

Client Name:		Farm #:	
Field(s):		Tract #:	
Designed By:		Date:	

Purpose: Check all that apply

1-Reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in runoff	2-Reduce dissolved contaminant loadings in runoff
3-Reduce sediment and contaminants entering a Riparian Forest Buffer	4-Reduce sediment, particulate organics, and sediment adsorbed contaminant loadings in surface irrigation tailwater
5-Restore, create or enhance herbaceous habitat for wildlife and beneficial insects	6-Maintain or enhance watershed functions and values
7-Other (Specify):	

Layout	Strip 1		Strip 2		Strip 3	
Strip width (feet) (25 foot minimum)						
Strip length (feet)						
Drainage area (acres)						
Area in strip (acres) (if the purpose is #1, ratio of drainage area to filter area must be less than 60:1)						
Filter area Soil Information	Soil Type	Drainage Class	Soil Type	Drainage Class	Soil Type	Drainage Class
Field slope (%) (if the purpose is #1, slope must be between 1 and 10)						

Plant Materials (species/cultivars) Use only viable, high quality, and regionally adapted seed.	Seeding Rate Pure Live Seed –(lbs/acre)	Planned Seeding Date
Strip 1:		
Strip 2:		
Strip 3:		

Soil Amendments and Fertilization	Strip 1			Strip 2			Strip 3		
Lime per Soil Test (tons/acre)									
Fertilizer per Soil Test – (lbs/acre)	N	P	K	N	P	K	N	P	K
Soil Test Lab Number or name									

Site Preparation

Prepare a firm seedbed to assure good soil to seed contact. Apply lime and fertilizer as indicated by soil testing.

Planting Methods (For detailed information see VT practice standard 512: Pasture and Hay Planting)

Buy high quality certified seed. Seed as early as possible in the spring, when soils are dry enough to resist compaction. If seeding in late summer, seed by mid august. Inoculate legumes with the proper strain of Rhizobium to insure nitrogen fixation. For species and rate recommendations, see Table 1.

Operation and Maintenance

Maintain original width and length of the filter strip.

Harvest as appropriate to encourage dense growth, maintain an upright growth habit, and remove nutrients and other contaminants.

Control undesired weed species, especially state-listed noxious and invasive weeds.

Apply supplemental nutrients as needed to maintain the desired species composition and stand density of the filter strip

Inspect the filter strip after major storms.

Remove trapped sediment, and repair and reseed disturbed or eroding areas and take other measures to prevent concentrated flow through the filter strip.

Periodically re-grade the filter strip area when sediment deposition at the filter strip-field interface jeopardizes its function, and then reestablish the filter strip vegetation, if needed.

Additional Specifications and Notes:

*The minimum flow length (width) for filter strips designed to reduce dissolved contaminants in runoff or to enhance wildlife habitat shall be **35 feet**.*

Other:

TABLE 1 - Seed Mixtures for Pasture and Hay Seeding Rates of Pure Live Seed Per Acre ^{1/}

**For Filter Strip Establishment, it is recommended that at least 2 varieties of grass be used.
Low rates of legumes can be added to the seeding mix if desired.**

Legume Seed (if one legume only use high rate)				Grass Seed (in mixes use lower rate) ^{3/}					
Primary Legume		Secondary Legume		Orchard Grass	Tall Fescue ^{2/}	Smooth Brome grass	Reed Canary Grass ^{5/}	Timothy	Kentucky Bluegrass
Alfalfa ^{6/}	8-10			4-6	6-8	4-6		2-4	
Alfalfa ^{6/}	12-18	(hayland only)							
Alfalfa ^{6/}	6-8	Red Clover	2-4	4-6	6-8	5-7		2-4	
Alfalfa ^{6/}	4-6	Red Clover	2	3					
Alfalfa ^{6/}	6-8	Ladino Clover	1/4	4-6	6-8	5-7		2-4	
Red clover	6-8			4-6	8-10	5-7		2-4	
Red clover	4-6	Ladino Clover	1/4	4-6	8-10	5-7		2-4	
Red clover	6-8				8-10				
Red clover	6-8	Alsike Clover	2	4-6	8-10	5-7	3-5	2-4	
Alsike clover	3-5	Ladino Clover	1/4	4-6	8-10	5-7	3-5	2-4	
Birdsfoot trefoil	5			2-4		4-6	6-8	2-4	2-4
Red Clover	6-10	Ladino Clover	1/2	4-6		4-6		2-4	
One Grass Only ^{3/}				16		10	14 ^{4/}		

^{1/} Make sure the minimum adequate drainage and area planting dates for the specific site are correct for the species chosen (See Table 5 of the Vermont NRCS 412 Pasture and Hay Planting Standard).

Most certified and licensed Vermont seed companies selling cool season grasses and legumes have documented > 95 percent purity and > 95 percent germination for all species sold. In these cases, use their bulk rates as equal to PLS.

^{2/} Endophyte free varieties.

^{3/} Additional grass seed species may be added to these first choices of grass seed species if determined by the conservation planner. If this is done, use the lower rate of PLS of the additional species but no lower than 50 percent.

^{4/} For non-drained organic soils, use appropriate varieties of Reed Canarygrass with Timothy as a quick germination variety. Only Reed Canarygrass, Tall Fescue, Smooth Brome grass, and Timothy can take 30 days of spring flooding.

^{5/} If an objective for the Filter Strip is enhancement of wildlife habitat, choose a planting option other than Reed Canarygrass.

^{6/} Alfalfa is not generally recommended for filter strip establishments.

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If needed, an aerial view or a side view of the practice can be shown below. Other relevant information, complementary practices and measures, and additional specifications may be included.

Recommendation: Import digital photographs to indicate practice before and after effects. For instructions regarding importing graphics to this doc go to: ftp://ftp-fc.sc.egov.usda.gov/VT/Technical/Help/Adobe_PDF_Help_1.pdf

Scale 1"=_____ ft. (NA indicates sketch not to scale: grid size=1/2" by 1/2")



Additional Comments:

Additional Notes:

- * PLS = Pure Live Seed. To compute pure live seed multiply the "germination percent X "purity" and divide that by "100" to get PURE LIVE SEED. Germination percent and purity should appear on the label.
- * Birdsfoot Trefoil and Sweet Clover may spread in certain soils and conditions in Vermont.
- * Mixed stands generally have less insect and disease damage than monoculture stands.

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